

AMENDMENTS TO THE CLAIMS

Please amend the claims as shown directly below. This listing of claims will replace all prior versions, and listings, of claims in the application.

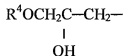
1. (Currently Amended) A method of treating a subterranean formation penetrated by a well bore comprising:

preparing or providing an aqueous treating fluid composition comprising water, a water soluble hydrophobically modified gelling agent polymer produced by grafting a low concentration of hydrophobic monomers onto said a gelling agent polymer, a crosslinking agent, and an ionic surfactant having a hydrophobic chain portion associated with said hydrophobic monomers grafted onto said gelling agent polymer resulting in hydrophobically modified gelling agent polymer molecules having increased radiuses of gyration, wherein said ionic surfactant is present in said treating fluid composition in an amount in the range of from about 0.01% to about 0.025% by weight of said composition; and

pumping said aqueous treating fluid composition into said subterranean formation.

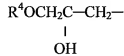
2. (Original) The method of claim 1 wherein said water is selected from the group consisting of fresh water and salt water.

3. (Previously Presented) The method of claim 1 wherein said hydrophobic monomers grafted onto said hydrophobically modified gelling agent polymer comprise at least two different alkyl substituents wherein the first alkyl substituent is selected from the group consisting of R and HOR¹ wherein R is an alkyl group containing from 1 to about 4 carbon atoms and R¹ is an alkylene group containing from about 2 to about 4 carbon atoms and the OH group is on the carbon atom beta to the ether group, and the second alkyl substituent is selected from the group consisting of R², HOR³, and



wherein R² is an alkyl group containing from about 8 to about 28 carbon atoms, R³ is an alkylene group containing from about 8 to about 28 carbon atoms and the OH group is on the carbon atom beta to the ether group, and R⁴ is an alkyl group containing from about 5 to about 25 carbon

atoms, wherein the substituent R or HOR¹ is present in a molecular substitution of from about 0.3 to about 1.5 and wherein the substituent R², HOR³, or



is present in a molecular substitution of from about 0.001 to about 0.2.

4. (Currently amended) The method of claim 1 wherein said gelling agent polymer is a biopolymer selected from the group consisting of xanthan and ~~succinoglycan~~ succinoglycan.

5. (Previously Presented) The method of claim 1 wherein said gelling agent polymer is a water dispersible organic polymer selected from the group consisting of polyvinyl alcohol, polyacrylamide, polyacrylate, and polyacrilamide/acrylic acid copolymers.

6. (Previously Presented) The method of claim 1 wherein said gelling agent polymer is a polysaccharide selected from the group consisting of galactomannan gums, derivative galactomannan gums, and cellulose derivatives.

7. (Previously Presented) The method of claim 6 wherein said galactomannan gum is selected from the group consisting of guar gum, gum arabic, gum ghatti, gum karaya, tamarind gum, and locust bean gum.

8. (Original) The method of claim 6 wherein said derivatized galactomannan gum is selected from the group consisting of carboxyalkyl and hydroxyalkyl derivatives of guar.

9. (Previously Presented) The method of claim 6 wherein said cellulose derivative is selected from the group consisting of carboxymethylcellulose, carboxymethylhydroxyethylcellulose, hydroxyethylcellulose, methylhydroxypropylcellulose, methylcellulose, ethylcellulose, propylcellulose, ethylcarboxymethylcellulose, methylethylcellulose, and hydroxypropylmethylcellulose.

10. (Previously Presented) The method of claim 1 wherein said hydrophobically modified gelling agent polymer is present in said treating fluid composition in an amount in the range of from about 20 lbs to about 60 lbs per 1000 gal of said composition.

11. (Previously Presented) The method of claim 1 wherein said ionic surfactant is an anionic surfactant selected from the group consisting of sodium lauryl sulfate, alpha olefin sulfonate, alkylether sulfates, alkyl phosphonates, alkane sulfonates, fatty acid salts, arylsulfonic acid salts, and mixtures thereof.

12. (Original) The method of claim 1 wherein said ionic surfactant is a cationic surfactant selected from the group consisting of trimethylcocoammonium chloride, trimethyltallowammonium chloride, dimethyldicocoammonium chloride, bis(2-hydroxyethyl)tallow amine, bis(2-hydroxyethyl)erucylamine, bis(2-hydroxyethyl)coco-amine, cetylpyridinium chloride, and mixtures thereof.

13. (Canceled)

14. (Canceled)

15. (Previously Presented) The method of claim 1 wherein said crosslinking agent is selected from the group consisting of boron compounds, compounds that supply zirconium IV ions, compounds that supply titanium IV ions, aluminum compounds, and compounds that supply antimony ions.

16. (Previously Presented) The method of claim 1 wherein said crosslinking agent is present in said aqueous treating fluid composition in an amount in the range of from about 4 lbs to about 40 lbs per 1000 gallons of said aqueous treating fluid composition.

17. (Currently Amended) A method of fracturing a subterranean formation penetrated by a well bore comprising:

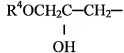
preparing or providing an aqueous fracturing fluid composition comprising water, a water soluble hydrophobically modified gelling agent polymer produced by grafting a low concentration of hydrophobic monomers onto ~~said~~ a gelling agent polymer, a crosslinking agent, and an ionic surfactant having a hydrophobic chain portion associated with said hydrophobic monomers grafted onto said gelling agent polymer resulting in hydrophobically modified gelling agent polymer molecules having increased radiuses of gyration, wherein said ionic surfactant is present in said treating fluid composition in an amount in the range of from about 0.01% to about 0.025% by weight of said composition; and

pumping said fracturing fluid composition into said subterranean formation at a rate and pressure sufficient to form one or more fractures therein.

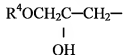
18. (Original) The method of claim 17 wherein said water is selected from the group consisting of fresh water and salt water.

19. (Previously Presented) The method of claim 17 wherein said hydrophobic monomers grafted onto said hydrophobically modified gelling agent polymer comprise at least two different alkyl substituents wherein the first alkyl substituent is selected from the group

consisting of R and HOR¹ wherein R is an alkyl group containing from 1 to about 4 carbon atoms and R¹ is an alkylene group containing from about 2 to about 4 carbon atoms and the OH group is on the carbon atom beta to the ether group, and the second alkyl substituent is selected from the group consisting of R², HOR³, and



wherein R² is an alkyl group containing from about 8 to about 28 carbon atoms, R³ is an alkylene group containing from about 8 to about 28 carbon atoms and the OH group is on the carbon atom beta to the ether group, and R⁴ is an alkyl group containing from about 5 to about 25 carbon atoms, wherein the substituent R or HOR¹ is present in a molecular substitution of from about 0.3 to about 1.5 and wherein the substituent R², HOR³, or



is present in a molecular substitution of from about 0.001 to about 0.2.

20. (Currently Amended) The method of claim 17 wherein said gelling agent polymer is a biopolymer selected from the group consisting of xanthan and ~~succinoglycon~~ succinoglycan.

21. (Previously Presented) The method of claim 17 wherein said gelling agent polymer is a water dispersible organic polymer selected from the group consisting of polyvinyl alcohol, polyacrylamide, polyacrylate, and polyacrilamide/acrylic acid copolymers.

22. (Previously Presented) The method of claim 17 wherein said gelling agent polymer is a polysaccharide selected from the group consisting of galactomannan gums, derivative galactomannan gums, and cellulose derivatives.

23. (Previously Presented) The method of claim 22 wherein said galactomannan gum is selected from the group consisting of guar gum, gum arabic, gum ghatti, gum karaya, tamarind gum, and locust bean gum.

24. (Original) The method of claim 22 wherein said derivatized galactomannan gum is selected from the group consisting of carboxyalkyl and hydroxyalkyl derivatives of guar.

25. (Previously Presented) The method of claim 22 wherein said cellulose derivative is selected from the group consisting of carboxymethylcellulose, carboxymethylhydroxyethylcellulose, hydroxyethylcellulose, methylhydroxypropylcellulose,

methylcellulose, ethylcellulose, propylcellulose, ethylcarboxymethylcellulose, methylethylcellulose, and hydroxypropylmethylcellulose.

26. (Previously Presented) The method of claim 17 wherein said hydrophobically modified gelling agent polymer is present in said fracturing fluid composition in an amount in the range of from about 20 lbs to about 60 lbs per 1000 gal of said composition.

27. (Previously Presented) The method of claim 17 wherein said ionic surfactant is an anionic surfactant selected from the group consisting of alpha olefin sulfonate, alkylether sulfates, alkyl phosphonates, alkane sulfonates, fatty acid salts, arylsulfonic acid salts, and mixtures thereof.

28. (Original) The method of claim 17 wherein said ionic surfactant is a cationic surfactant selected from the group consisting of trimethylcocoammonium chloride, trimethyltallowammonium chloride, dimethyldicocoammonium chloride, bis(2-hydroxyethyl)tallow amine, bis(2-hydroxyethyl)erucylamine, bis(2-hydroxyethyl)coco-amine, cetylpyridinium chloride, and mixtures thereof.

29. (Canceled)

30. (Canceled)

31. (Previously Presented) The method of claim 17 wherein said crosslinking agent is selected from the group consisting of boron compounds, compounds that supply zirconium IV ions, compounds that supply titanium IV ions, aluminum compounds, and compounds that supply antimony ions.

32. (Previously Presented) The method of claim 17 wherein said crosslinking agent is present in said aqueous treating fluid composition in an amount in the range of from about 2 lbs to about 40 lbs per 1000 gallons of said aqueous treating fluid composition.

33. (Currently Amended) An aqueous treating fluid composition for treating a subterranean formation comprising:

water;

a water soluble hydrophobically modified gelling agent polymer produced by grafting a low concentration of hydrophobic monomers onto said a gelling agent polymer;

a crosslinking agent; and

an ionic surfactant having a hydrophobic chain portion associated with said hydrophobic monomers grafted onto said gelling agent polymer resulting in hydrophobically modified gelling agent polymer molecules having increased radiuses of gyration; wherein:

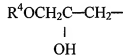
~~wherein~~-said ionic surfactant is present in said treating fluid composition in an amount in the range of from about 0.01% to about 0.025% by weight of said composition;

said hydrophobically modified gelling agent polymer acts to viscosify said treating fluid composition; and

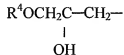
said hydrophobic monomers grafted onto said hydrophobically modified gelling agent polymer comprise at least two different alkyl substituents.

34. (Original) The composition of claim 33 wherein said water is selected from the group consisting of fresh water and salt water.

35. (Currently Amended) The composition of claim 33 ~~wherein said hydrophobic monomers grafted onto said hydrophobically modified gelling agent polymer comprise at least two different alkyl substituents~~ wherein the first alkyl substituent is selected from the group consisting of R and HOR¹ wherein R is an alkyl group containing from 1 to about 4 carbon atoms and R¹ is an alkylene group containing from about 2 to about 4 carbon atoms and the OH group is on the carbon atom beta to the ether group, and the second alkyl substituent is selected from the group consisting of R², HOR³, and



wherein R² is an alkyl group containing from about 8 to about 28 carbon atoms, R³ is an alkylene group containing from about 8 to about 28 carbon atoms and the OH group is on the carbon atom beta to the ether group, and R⁴ is an alkyl group containing from about 5 to about 25 carbon atoms, wherein the substituent R or HOR¹ is present in a molecular substitution of about 0.3 to about 1.5 and wherein the substituent R², HOR³, or



is present in a molecular substitution of from about 0.001 to about 0.2.

36. (Currently Amended) The composition of claim 33 wherein said gelling agent polymer is a biopolymer selected from the group consisting of xanthan and succinoglycen succinoglycan.

37. (Previously Presented) The composition of claim 33 wherein said gelling agent polymer is a water dispersible organic polymer selected from the group consisting of polyvinyl alcohol, polyacrylamide, polyacrylate, and polyacrilamide/acrylic acid copolymers.

38. (Previously Presented) The composition of claim 33 wherein said gelling agent polymer is a polysaccharide selected from the group consisting of galactomannan gums, derivative galactomannan gums, and cellulose derivatives.

39. (Previously Presented) The composition of claim 38 wherein said galactomannan gum is selected from the group consisting of guar gum, gum arabic, gum ghatti, gum karaya, tamarind gum, and locust bean gum.

40. (Original) The composition of claim 38 wherein said derivatized galactomannan gum is selected from the group consisting of carboxyalkyl and hydroxyalkyl derivatives of guar.

41. (Previously Presented) The composition of claim 38 wherein said cellulose derivative is selected from the group consisting of carboxymethylcellulose, carboxymethylhydroxyethylcellulose, hydroxyethylcellulose, methylhydroxypropylcellulose, methylcellulose, ethylcellulose, propylcellulose, ethylcarboxymethylcellulose, methylethylcellulose, and hydroxypropylmethylcellulose.

42. (Previously Presented) The composition of claim 33 wherein said hydrophobically modified gelling agent polymer is present in said composition in an amount in the range of from about 20 lbs to about 60 lbs per 1000 gal of said composition.

43. (Previously Presented) The composition of claim 33 wherein said ionic surfactant is an anionic surfactant selected from the group consisting of sodium lauryl sulfate, alpha olefin sulfonate, alkylether sulfates, alkyl phosphonates, alkane sulfonates, fatty acid salts, arylsulfonic acid salts, and mixtures thereof.

44. (Original) The composition of claim 33 wherein said ionic surfactant is a cationic surfactant selected from the group consisting of trimethylcocoammonium chloride, trimethyltallowammonium chloride, dimethyldicocoammonium chloride, bis(2-hydroxyethyl)tallow amine, bis(2-hydroxyethyl)erucylamine, bis(2-hydroxyethyl)coco-amine, cetylpyridinium chloride, and mixtures thereof.

45. (Canceled)

46. (Canceled)

47. (Previously Presented) The composition of claim 33 wherein said crosslinking agent is selected from the group consisting of boron compounds, compounds that supply zirconium IV ions, compounds that supply titanium IV ions, aluminum compounds, and compounds that supply antimony ions.

48. (Previously Presented) The composition of claim 33 wherein said crosslinking agent is present in said aqueous treating fluid composition in an amount in the range of from about 2 lbs to about 40 lbs per 1000 gallons of said aqueous treating fluid composition.